Journal of Plant Development Sciences

(An International Monthly Refereed Research Journal)

Volume 8 Number 10 October 2016

Contents

RESEARCH ARTICLES

SHORT COMMUNICATION

SITE–SPECIFIC INTEGRATED NUTRIENT MANAGEMENT FOR SUSTAINABLE CROP PRODUCTION AND GROWTH: A REVIEW

[1]Thaneshwar Kumar*, [2]R.G. Goswami, [3]A.K. Singh, and [4]Meshwar Pratap Singh

Department of Soil Sciences & Agricultural Chemistry, Indira Gandhi Krishi Vishwavidyalaya, Raipur - 492012 (C.G)
Email: thaneshward15@gmail.com

Received-09.10.2016, Revised-22.10.2016

Abstract: Initially after green revolution the food grain production boosted up tremendously, but sign of fatigueness emerged after 1980 with sharp decline in factor productivity, stagnation in crop yields with unstable and marginal farm incomes; all of which are now posing a serious threat to food security, agricultural sustainability, soil and environmental health and rural agricultural economy in the developing world. Growing concerns about impaired soil health, declining productivity growth and decreasing factor productivity or nutrient-use efficiency (NUE) are compelling the farmers to use higher levels of fertilizers during the last two decades. Excessive use of fertilizers in imbalanced ratios leading to low nutrient use efficiency and associated environmental problems has raised serious concerns about the existing nutrient management practices. It is high time to develop site-specific nutrient management (SSNM) technologies which are able to make synergy with crop–soil nutrient dynamics. The SSNM is need-based feeding of crops with nutrients in right rate and right time while, recognizing the inherent spatial variability which enhances crop productivity, profitability, NUE and avoids nutrient wastage. This paper deals with the SSNM technologies approaches and tools which are able to enhance NUE, crop productivity and profitability.

Keywords: Site-specific nutrient management, Nutrient-use efficiency, Crop productivity

STUDIES ON AERIAL BLIGHT OF SOYBEAN CAUSED BY *RHIZOCTONIA SOLANI* KUHN

Tikendra Kumar*, R.K. Dantre and K.P. Verma

Department of Plant Pathology, Indira Gandhi Agricultural University, Raipur 492006, Chhattisgarh, India
Email: tikendrasahu4481@gmail.com

Received-12.10.2016, Revised-24.10.2016

Abstracts: Soybean (Glycine max (L.) Merrill) is one of the most important oil seed crop of India. It was wonder of the twentinth century. Soybean rank first among world oilseed with an annual production of about 105 mt. Among the different growing countries of the world, USA, China, Brazil, Argentina and India are main which accounts more than 90% of the world's acreage (Taware et al., 2007). Soybean (Glycine max (L.) Merill.) a grain legume is widely crop due to its high quality protein (40%) and edible oil (20%). Aerial blight caused by Rhizoctonia solani is one of the most soil borne diseases of soybean particularly in the northern zone comprising the states of Haryana, Punjab, Uttar Pradesh and Uttarkhand.

Keywords: Soyabean, Rhizoctonia solani, Disease, Chemical, Fungicide

OXIDATIVE STRESS RESPONSES IN LEGUMINOUS CROPS IN RESPONSE TO SULPHUR DIOXIDE: A MAJOR AIR POLLUTANT

Shefali Poonia*

Department of Botany, D.N. College, Meerut
Email: shefalipoonia2410@gmail.com

Received-06.10.2016, Revised-20.10.2016

Abstract: Present study is an attempt to evaluate and compare the oxidative stress response in Vigna mungo L. cv.T-9, Pisum sativum L. cv. Arkil, Cajanus cajan L. cv. UPAS – 120 and Cicer arietinum L. cv. Avrodhi on exposure to four different concentrations of sulphur dioxide, viz. 653, 1306, 2612 and 3918 µg m-3 at different plant ages. Observations were made and results incurred at 40 and 80 d of plant age. Oxidative stress was observed in the form of Ascorbic acid content which was evaluated, tabulated and statistically analysed. An initial enhancement in the ascorbic acid content was observed upon fumigation with SO2 in the four cultivarswhich was followed by a gradual reduction in the ascorbic acid level with increasing age. Increased level of ascorbic acid has been related with the tolerance of plant to the pollutant. Cajanus cajan exhibited highest degree of tolerance.

Keywords: Air pollution, Sulphur dioxide, Oxidative stress, Ascorbic acid, Legumes

Journal of Plant Development Sciences Vol. 8(10)

CUMULATIVE AND RESIDUAL EFFECTS OF PHOSPHORUS AND ZINC NUTRIENTS UNDER GERANIUM– RICE (*ORYZA SATIVA*) CROPPING SEQUENCE

Santosh Singh*

Department of Agronomy, Government Degree College, Jakhini, Varanasi-221305
Email: santosh_gdc@rediffmail.com

Received-13.10.2016, Revised-25.10.2016

Abstract: A field experiment was conducted at Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow to evaluate the cumulative and residual effects of phosphorus and zinc sources of nutrients under geranium– rice cropping sequence. The treatment involved three cropping system viz geranium paired sole, garlic sole and geranium paired + garlic, three level of phosphorus (0, 40 & 80 Kg P2O5 /ha) and two levels of zinc (0 and 30 kg ZnSo4 /ha). Results reveled that application of Phosphorus at 40 Kg P2O5 ha-1 proved significantly better than control (No Phosphorus) in respect of production of geranium oil and garlic bulbs, further application of 30 kg ZnSO4 ha-1 significant increased the herb and oil yields of the crop over the no zinc application (control). Residual effects of P and Zn on the grain yield of succeeding rice crop that geranium crop followed by rice, 40 Kg P2O5 ha-1 was desirable, particularly in rabi crop season. However application of 30 Kg P2O5 ha-1 and 25 kg ZnSO4 ha-1 to rice grown after geranium was more beneficial.

Keywords: Geranium-rice sequence, Phosphorus & Zinc sources & levels, Cumulative and residual effects

Journal of Plant Development Sciences Vol. 8(10)

SELECTION OF IMPORTANT YIELD COMPONENT CHARACTERS BASED ON GENETIC ANALYSIS IN CELERY (*APIUM GRAVEOLENS* L.)

Paul Rita[1] * and Datta K. Animesh[2]

[1]Department of Botany, Charuchandra College, Kolkata – 29, West Bengal, India.
[2]Department of Botany, Cytogenetics and Plant Breeding Section, University of Kalyani, Kalyani 741235, West Bengal, India.
**Corresponding author: Dr. Rita Paul, Assistant Professor, Department of Botany, Charuchandra College, Kolkata – 29, West Bengal, India*
Email: ritapaul2000@gmail.com

Received-12.10.2016, Revised-24.10.2016

Abstract: Eleven genotypes (control and ten macromutants- maintained over generations through selfing) of Celery (Apium graveolens L.) are assessedbased on eight phenotypic traits (plant height, number of primary branches/plant, total branches/plant, number of compound umbels/plant, number of umbels/plant, number of umbellets of first inflorescence, total seed yield and harvest index) for selection of essential trait(s) maximizing yield through efficient breeding. ANOVA depict variations among the selected traits. Phenotypic and genotypic co-variance, heritability (broad sense) and genetic gain (5% level) performed reveal three important selection indices (total branches, no. of compound umbel and total umbel per plant) in celery.

Keywords: Celery, Germplasms, Quantitative traits, Selection

Journal of Plant Development Sciences Vol. 8(10)

STUDIES ON KNOWLEDGE LEVEL OF EXTENSION PERSONNEL REGARDING SUSTAINABILITY IN AGRICULTURE PRODUCTION

Laxmikant,[1] * Anuradha Ranjan Kumari[2] , Ravindra Kumar[3] and Satendra Kumar[4]

[1]Krishi Vigyan Kendra (SVPUA&T) Rampur UP.
[2]Krishi Vigyan Kendra (ICAR-IIVR) Deoria UP.
[3]KVK, Rampur 4Department of Soil Science SVPUA&T, Meerut

Received-12.10.2016, Revised-23.10.2016

Abstract : In order to enhance food grain production there has been over exploitation of natural resources and due to which land, water and soil have been subjected to great stress resulting in soil degradation, soil erosion, salinity and alkalinity, sifting cultivation and nutrient losses. Hence, the concept of sustainability has emerged as an alternative for long term sustainable production and economic viability of Indian agriculture. The study was conducted in Rampur district with 80 Extension Personnel in order to assess their knowledge on sustainability. Extension Personnel possessed very good knowledge on soil and water conservation, integrated nutrient management, integrated weed management aspects, whereas in case of integrated water management there was low level of knowledge. The overall knowledge analysis shows that majority (56.25%) of extension personnel possessed medium level of knowledge whereas a good number (32.50%) were having higher level of knowledge.

Keywords: Knowledge level, Sustainable agricultural, Nutrient management, Integrated Weed management

Journal of Plant Development Sciences Vol. 8(10)

STUDIES ON INTEGRATED NUTRIENT SUPPLY ON YIELD OF FODDER MAIZE + LEGUMES INTERCROPPING SYSTEM IN INCEPTISOLS

R. Tigga* and G.K. Das

Department of Agronomy, Indira Gandhi Agricultural University, Raipur (CG) 497001

Received-02.10.2016, Revised-17.10.2016

Abstract : A field experiment was conducted during the winter seasons of 2008 -09 and 2009-10 at Raipur Chhattishgrah, to find out the effect of integrated nutrient supply on yield of fodder Maize + legumes intercropping system in inceptisols. The results of experiment revealed that maize + ber seem (1:1) produced significantly maximum total green fodder yield (662.52 & 680.10 q ha-1), maize equivalent yield (702.37 & 721.34 q ha-1) & relative yield equivalent ratio (162% & 164%) as compared to other treatments during both the years respectively as well as mean basis whereas, significantly higher total dry matter yield (128.54 & 133.88 q ha-1) were recorded with the treatment of maize + lucerne (1:1) during second year. Among integrated nutrient supply, the application of 50% RFD + 10 tonnes FYM + ZnSO4 was recorded significantly higher value of total green fodder yield (626.96 & 648.66 q ha-1), total dry matter yield (125.91 & 129.75 q ha-1) and maize equivalent yield (650.93 & 670.25 q ha-1) during both the years and mean basis. With respect to interaction effect of intercropping and integrated nutrient supply reveals that treatment combination of maize + berseem (1:1) and application of 50% RFD + 10 tonnes FYM + ZnSO4 were recorded significantly higher total green fodder yield than others except treatment combination of maize + ber seem (1:1) and application of 50% RFD + 10 tones MSC + ZnSO4 .

Keywords : Integrated nutrient supply, Fodder maize + legumes intercropping, Fodder yield

Journal of Plant Development Sciences Vol. 8(10)

YIELD PERFORMANCE OF TIKHUR (CURCUMA ANGUSTIFOLIA ROXB.) GENOTYPES IN NARAYANPUR DISTRICT OF CHHATTISGARH

M.K. Sahu[1] , Deo Shankar*[2] , R.R. Kanwar[2] and D.P. Singh[2]

[1]*Krishi Vigyan Kendra (IGKV) Jagdalpur (C.G.)*
[2] *S G. College of Agriculture and Research Station, (IGKV), Kumhrawand, Jagdalpur, Bastar (C.G.) 494 005*
Email: deo1975ram@gmail.com

Received-07.10.2016, Revised-18.10.2016

Abstract : The investigation was undertaken during the year of kharif season 2014-15 and 2015-16 at demonstration farm of KVK, Narayanpur. The experiment was laid out in Randomized Complete Block Design (RCBD) and experiment was conducted for evaluation of six genotypes of Tikhur (IGSJT-10-1, IGSJT-10-2, IGBLT-10-1, IGBT-10-4, IGDMT-10-1 and Local Check) with three replications. The genotypes were grown randomly in each replication/block in a total of 18 plots of 3.0 m x 2.4 m each containing 60 plants per plot and planting spacing was 60 x 20 cm. Observations were recorded from ten randomly selected sample plants in each treatment and observed mean value used for statistical analysis. The result revealed that the maximum rhizome weight (327.5 g plant-1) maximum rhizome yield (27.30 t ha-1) and starch recovery 14.29 per cent was recorded in genotype IGSJT-10-2 and followed by IGSJT-10-1. On the basis of experimental results of two years pooled data the genotype IGSJT-10-2 may be recommended to farmers of Narayanpur district for commercial production.

Keywords: Tikhur, Curcuma angustifolia Roxb., Rhizome yield, Starch recovery per cent MLT

Journal of Plant Development Sciences Vol. 8(10)

ASSESSMENT OF KNOWLEDGE GAP ABOUT ORGANIC FARMING ASPECT, FACTS AND PRACTICES OF FARMERS OF RAMPUR DISTRICT OF UTTAR PRADESH

Laxmikant,[1] * Anuradha Ranjan Kumari[2] , Ravindra Kumar[3] and Satendra Kumar[4]

[1]*Krishi Vigyan Kendra (SVPUA&T) Rampur UP.*
[2]*Krishi Vigyan Kendra (ICAR-IIVR) Deoria UP.*
[3] *KVK, Rampur*
[4] *Department of Soil Science SVPUA&T, Meerut*

Received-12.10.2016, Revised-25.10.2016

Abstract: The study was undertaken to access the knowledge gap of organic farming practices of farmers of Rampur district. Out of six blocks, three blocks selected purposively for this study. Four villages selected from each block thus, total twelve villages were selected randomly. From these villages five organic practicing farmers were selected by simple random techniques. Thus there were total sixty numbers of farmers were selected. The data were collected with the help of structured interview schedule. From this analysis data, it was concluded that majority (43.34%) of farmers had high knowledge level of organic farming practices. The wide knowledge gap are in the areas of organic farming practices like use of HaNPV (46.66%), use of trichocards (42.50%), use of bio pesticides (37.50%), use of bio fertilizers (34.16%), use of NADEP compost (31.66%) and use of mechanical cultivation (29.16%). The overall knowledge gap of farmers in organic farming practices were 31.95 percent.

Keywords: Knowledge gap, Organic farming practices, Farmers, Rampur district

Journal of Plant Development Sciences Vol. 8(10)

SCREENING OF LINSEED GENOTYPES AGAINST BUD FLY, DASYNEURA LINI (BARNES) IN SURGUJA OF CHHATTISGARH

K.L. Painkra, P.K. Bhagat and G.P. Painkra*

IGKV, Entomology Section, Rajmohini Devi College of Agriculture & Research Station, Ambikapur, Surguja (Chhattisgarh) India 497001
Email : gppainkrarmd@gmail.com

Received-13.10.2016, Revised-25.10.2016

Abstract : Fifty four linseed genotypes were screened among them one genotype ie RLC-133 was found resistant however other eighteen genotypes viz- R-4226, R-4231, R-4234, R-4236, R-4237, R-4239, R-4240, R-552, RLC-92, RLC-133, R-4230, R-4232, R-4226, R-4233,R-4237,-4238, RLC-92, RLC-133 were found moderately resistant and thirty fives genotypes R-4221, R-4229, R-4230, R-4232, R-4233, R-4235, R-4238, R-RLC-92, TA-32, R-4235, R-4236, R-4237, R- 4238, R-4239, R-4240, R -552, IA-32, R-4226, R-4227, R-4229, R-4231, R-4233, R-4234, R-4227, R-4229, R-4230, R- 4231, R-4232, R-4234, R-4235, R-4236, R-4239, R-4240, R-552, IA-32 were found susceptible.

Keywords: Linseed genotypes, Bud fly, Crop, Production